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ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

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Memorandum

To: **LaDonna Turner, Site Assessment Manager**
Technical and Enforcement Branch
U.S. Environmental Protection Agency, Region 6

Date: **September 1, 2009**

From: **Dana Bahar, Manager, Superfund Oversight Section**
Ground Water Quality Bureau, New Mexico Environment Department.

Subject: **Pre-CERCLIS Screening Assessment of Spencer Mine, McKinley County, New Mexico: Further action under CERCLA recommended**

Site name	Spencer Mine	**Street address**	not applicable		
City	not applicable	**State**	New Mexico	**Zip code**	not applicable
County	McKinley				
Latitude	35° 22’ 25.23”	**Longitude**	107° 49’ 16.58”		

Site physical description: The Spencer Mine currently comprises a headframe that has collapsed into the mineshaft due to capture and undercutting by the formerly-adjacent surface drainage, and numerous barren waste piles that are cut by or adjacent to the surface drainage. The collapsed mineshaft is poorly fenced. Several concrete pads, possibly the remains of buildings, are evident outside of the surface drainage. A vent shaft, comprising a large diameter pipe, protrudes approximately 4 feet above the drainage channel surface approximately 300 feet north of the mineshaft and fallen headframe. The Site is located approximately 1 mile south of the Ambrosia Lake—Rio Algom millsite, and 0.3 mile southwest of the southern portion of the Isabella Mine. A gopher colony is located on the north bank of the surface drainage.

Site identification: Potential alluvial ground water contamination within the Grants Mineral Belt was identified because background standards established for the contaminants of concern for ongoing remedial action associated with the Homestake Mining Company NPL site (CERCLIS NMD0007860935) are generally higher than Maximum Contaminant Levels (MCLs). The New Mexico Environment Department (NMED) conducted sampling of private residential wells in subdivisions located in the vicinity of the HMC site, and found that the majority had one or more contaminant concentrations exceeding MCLs.

Site summary: Observations made during a June 2, 2009 site visit are shown on accompanying figures. The enlarged mineshaft that has been captured by the surface drainage provides a conduit for surface water flows to enter the subsurface; waste materials from both the Spencer and Isabella (southern) mines have been deposited into this drainage above the mineshaft. The concrete

headframe foundations that remain on the bank of the drainage, as well as the surrounding fence, are collapsing into the mineshaft as arroyo undercutting continues. Waste piles and the mineshaft generally have elevated radioactivity (highest radioactivity=607 counts per second [cps]; background=40 cps). Waste piles associated with the site either are cut through by the surface drainage, or exhibit evidence of erosion, indicating that the materials have been distributed downstream. Principal contaminant pathways for this site include contamination of vicinity soils and surface drainages by precipitative erosion and wind dispersion of on-site wastes, and contamination of ground water via seepage through alluvium or by direct entry to the subsurface via the open shafts.
Targets: Residences are located near the junction of State Hwy. 605 and 509, approximately 3.0 air-miles southeast of the Site. Other potential targets may include cattle and wildlife.

Closest well sampled to date: livestock well SMC-17 (1.4 air-miles; 98.4 µg/l total uranium in 2009 sampling).
Site ownership and Potential Responsible Parties: Surface rights are held by the U.S. Bureau of Land Management. The Koppen Mining Construction Company reportedly last operated this mine in 1980
File review: NMED staff reviewed the following files:

- Database compiled by Mining and Minerals Division of the New Mexico Energy, Minerals, and Natural Resources Department (07/20/2007).
- Anderson, Orin J., 1980. "Abandoned or inactive uranium mines in New Mexico".
- McLemore, Virginia T. and William L. Chenoweth, 1991. "Uranium mines and deposits in the Grants district, Cibola and McKinley Counties, New Mexico." New Mexico Bureau of Mines and Mineral Resources Open-file report 353.
- Rappaport, Linda, "Uranium deposits of the Poison Canyon ore trend, Grants District," in "Geology and technology of the Grants Uranium Region, 1963. State Bureau of Mines and Mineral Resources.
- Souder, Miller, and Associates, 2008. "Abandoned uranium mine field survey project."
- U.S. Geological Survey, 1997. "Gallup quadrangle NURE HSSR study." OFR-97-492.

Site reconnaissance: NMED staff conducted a Site reconnaissance on June 3, 2009.
Recommendation: A release of CERCLA hazardous substances has been documented at the site. NMED recommends further investigation under CERCLA to assess the risk posed by the site using the Hazard Ranking System.

NMED recommends that the investigation include the following:

1. Sample sediments along drainages to characterize extent of Site-derived waste dispersion.
2. Investigate and characterize ground water impacts.

In addition NMED recommends the following actions be performed to address immediate threats to public health and the environment:

1. Remove waste with elevated radioactivity.
2. Plug open shaft and vent hole.

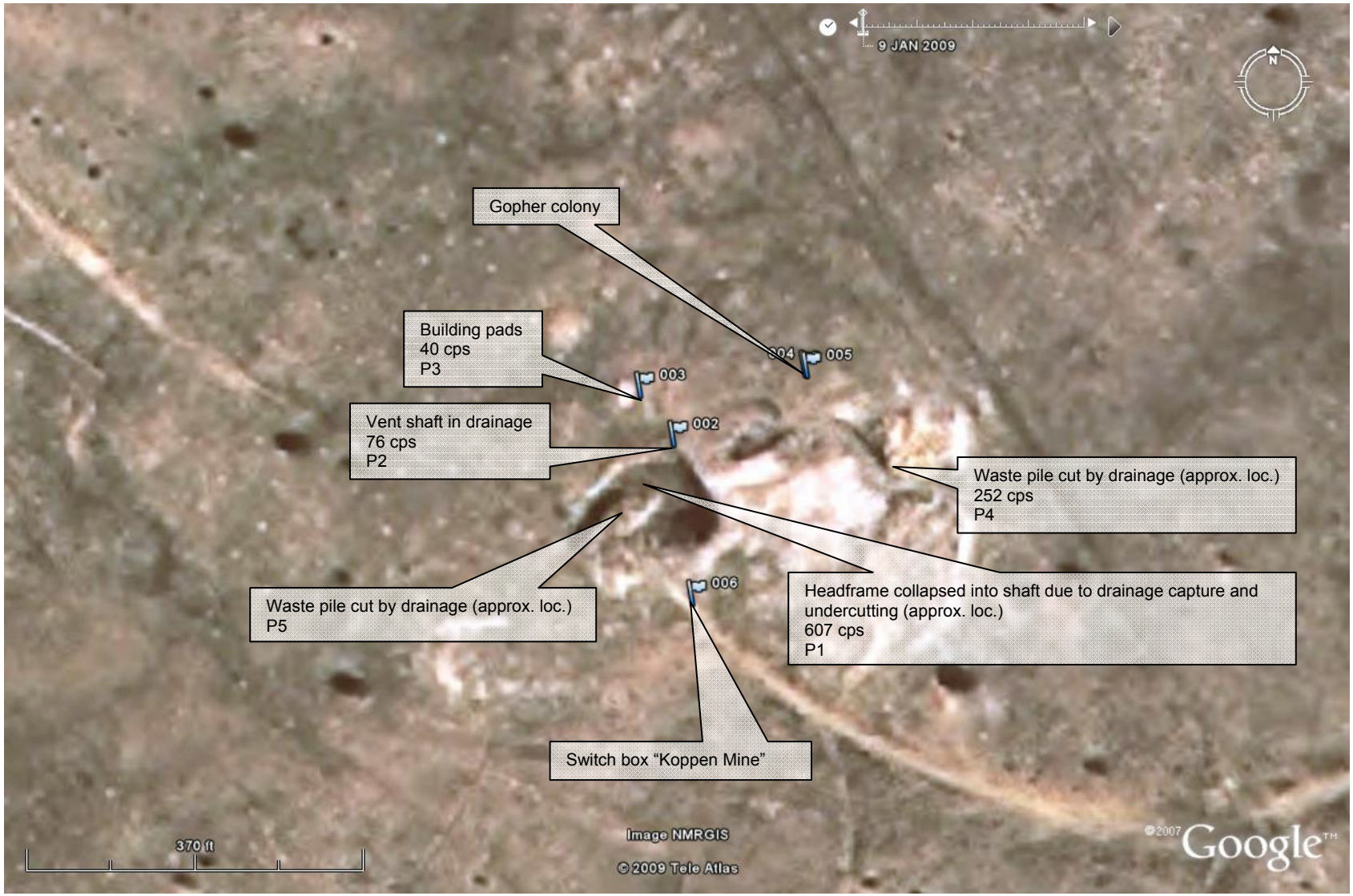

Figure 1: Spencer Mine—measurements taken on June 3, 2009

“Px” reference the location of photographs on pages following.

P1: Spencer Mine headframe collapsed into shaft due to arroyo capture and undercutting

P2: Spencer Mine vent shaft

P3: Spencer Mine building pad

P4: Spencer Mine waste pile cut through by arroyo

P5: Spencer Mine waste pile cut by drainage